Farm typologies and sustainable intensification: where the rubber meets the road

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Abstract

Farm typologies support the categorization of farms into homogeneous sub-sets, to elucidate entry points and appropriately target agricultural intensification technologies. This addresses a major challenge, the heterogeneous socio-economic and biophysical nature of small farms. The literature has largely focused on descriptions and formulation of these typologies, with almost nil reports on the application of farm typologies. We report on a simplified, practical typology approach, based on four years of participatory action research in Central Malawi with more than 1000 farmers. We designed and tested sustainable intensification interventions for two distinct farm types: highly resource-constrained farms that average 0.6 ha, and resource-endowed farms that average 2 ha. Resource-constrained farms are marginally interactive with input (seed, fertilizers, agrochemicals) or output markets. For these farms, low-input combinations of maize-bean intercrops (65 to 70% of farm) and doubled up legume technologies (e.g., groundnut-pigeonpea intercrops), with targeted use of modest fertilizer doses increased productivity of maize for this farm type by two fold. Results also confirmed that resource-endowed farms are market-integrated and have enterprises that generate positive farm income, when fertilized maize is allocated on 50% of the farm, with the other half cropped with groundnut, cowpea and soyabean. For both farm types, the cropping patterns harness biological N_2-fixation, ensure grain legume diversity for family nutrition and risk-buffered market opportunities, and concurrently add quality organic residues for soil fertility enhancement.

Key words: Crop rotations, doubled-up legume technology, intercropping, maize, pigeonpea